

ABSTRACT OF THE DISCLOSURE

[0142] An all wheel drive system for a motor vehicle in which wheel slippage is effectively controlled and regenerative energy is effectively stored for subsequent utilization in the system. A hydraulic embodiment of the invention includes a hydraulic motor, a pump, a tank, an accumulator for storing pressurized fluid, and a device for sensing system back pressure. In response to a loss of system back pressure the pressure of the fluid being supplied to the motor is reduced and the motor discharge is directed to the accumulator, and in response to a sensed resumption of system back pressure regenerative energy from the accumulator is directed to the motor to assist in powering the motor. An electric embodiment of the invention includes an electric motor, an electric generator, a device for storing electrical energy such as a battery pack or a capacitor bank, a DC tachometer driven by the motor and operative to sense the motor power requirements, and a directional circuit switch assembly. In response to a drop in the power requirements of the motor representing wheel slippage the energy supplied to the motor is reduced; in response to a sensed overrunning condition of the motor wherein the motor is functioning as a generator the output of the generator is routed to the energy storage device; and in response to a sensed resumption of motor power requirements regenerative energy is directed from the energy storage device to the motor to assist in powering of the motor.